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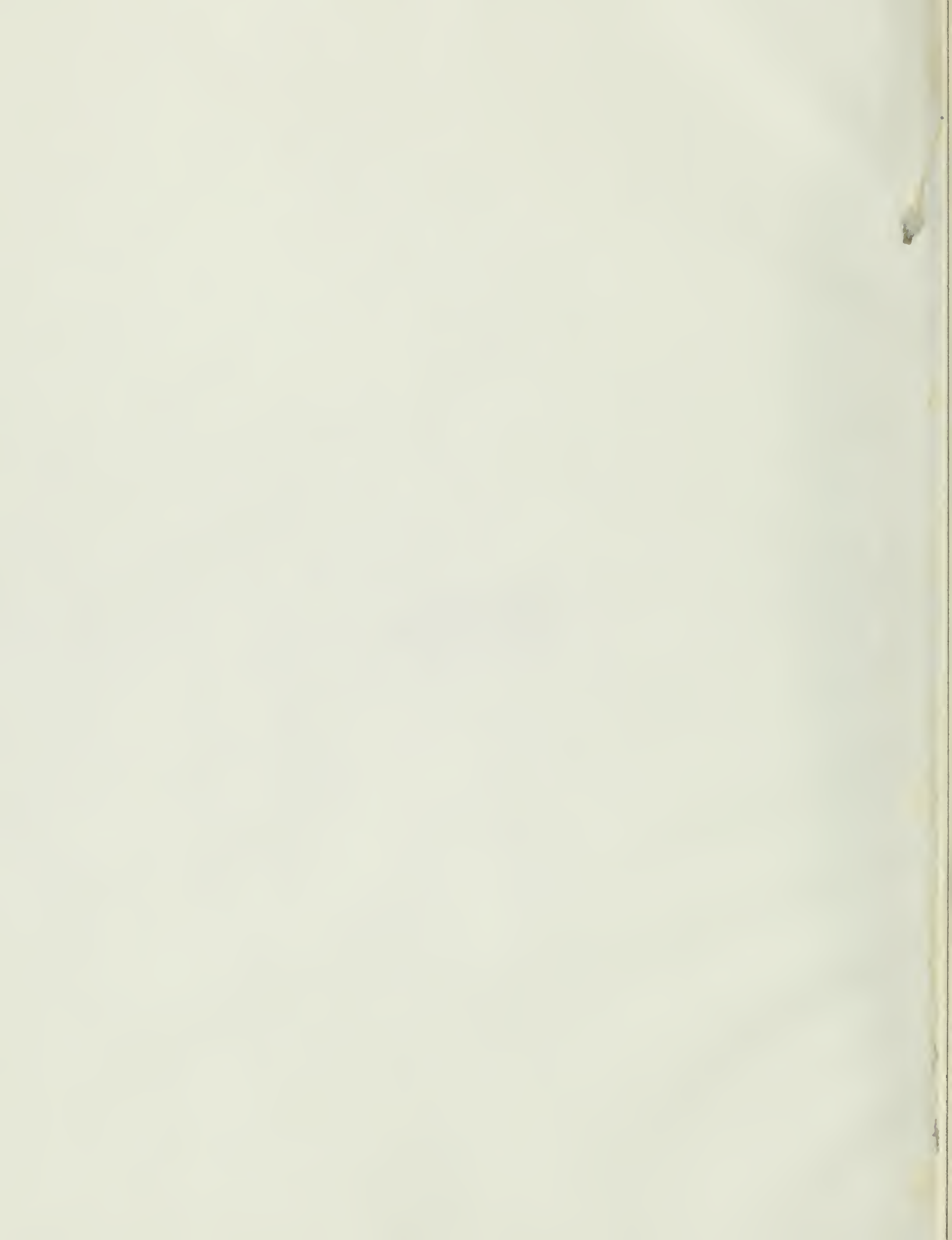
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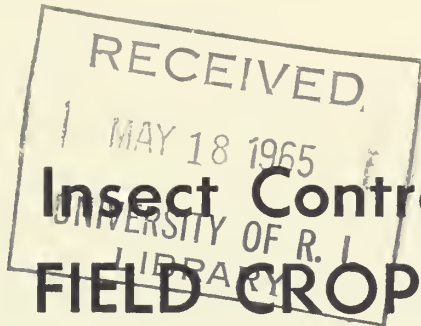


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1965 Condensed  
Insecticide  
Recommendations



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Insects and related pests play a major role in field crop production in Illinois. Although normal agromonic practices developed during the past century have reduced the importance of many insect pests, chinch bugs, grasshoppers, armyworms, aphids, white grubs, wireworms, cutworms, and many other native insects have continued to be threats to grain and forage production. These native pests have been joined by such aliens as the European corn borer, Japanese beetle, alfalfa weevil, spotted alfalfa aphid, southwestern corn borer, sweet clover weevil, and others. Without the use of the modern insecticides, these pests would seriously hamper economical production by Illinois farmers and harvests would be much less bountiful. Weather variations from year to year greatly affect insect populations, but annually Illinois farmers reap more than 20 millions dollars profit from the use of insecticides to control field crop pests.

Financial gain from use of insecticides has not been the only compensation. Use of modern insecticides reduces stalk breakage and lodging from insect damage. This possibly has reduced the incidence of clogged pickers and accidents. Proper use of insecticides has also greatly reduced the need for replanting. Thus proper use of insecticides is an integral part of our farming business.

However, those using insecticides should apply all the scientific knowledge available to insure that there will be no illegal residue on the marketed crop. Such knowledge is condensed on the label. Read it carefully and follow the instructions. But the label should be recent and not from a container several years old. Do not exceed maximum rates recommended; observe carefully the interval between application and harvest; and apply only to crops for which use has been approved. Make a

record of the product used, the trade name, the percentage content of the insecticide, dilution, rate of application per acre, and the date or dates of application.

Some of the insecticides recommended in this publication can be poisonous to the applicator. The farmer is expected to protect himself, his workers, and his family from undue or needless exposure.

The chemical names used in these tables may be unfamiliar to you. These names are the common coined chemical names and as such are not capitalized. Trade names are capitalized. In the table of limitations the common names are listed first. Should the trade name be more commonly used, it is in parentheses following the common name. Throughout the tables of recommendations, however, the common name is used if there is one. In case of question, refer to the table of limitations.

Recommendations sometimes change during the growing season. These recommendations are printed only once each year and are therefore subject to change without notification.

These recommendations were prepared by entomologists of the University of Illinois College of Agriculture and the Illinois Natural History Survey and replace mimeographs NHE 98 through 101.

Descriptions of specific insects, their life history, biology, and cultural control methods are available. These are designated in the tables with NHE numbers, and can be obtained from the county farm adviser or by writing to 280 Natural Resources Building, Urbana, Illinois.

Insecticide recommendations for vegetable crops (Circular 897), for livestock and livestock barns (Circular 898), and for the homeowner (Circular 900) can also be obtained from the above offices or from the College of Agriculture, Urbana.



## SPECIAL RECOMMENDATION CHANGES FOR 1965

We are recommending a conservative insecticide policy for Illinois dairy farmers. Certain chlorinated hydrocarbon insecticides are secreted in the butterfat when dairy cattle are exposed to minute amounts of them; fantastically small amounts of these insecticides can be chemically detected; the tolerance for insecticides in milk is zero. Therefore we recommend that the Illinois dairy farmer control insects with insecticides which, even though ingested in moderate amounts by dairy cows, are not secreted in the milk; we recommend that in 1965 he *not use* the chlorinated hydrocarbons, *aldrin*, *dieldrin*, *DDT*, *heptachlor*, *lindane*, or *toxaphene* except for corn seed treatment. If these insecticides are applied as foliage sprays or dusts immediately adjacent to dairy pasture or forage crops, those using them must exercise great care to avoid drift.

Furthermore we urge each dairy farmer purchasing ensilage corn, other forage, or feed to determine whether an objectionable residue is present. Contaminated feed should not be fed to dairy cattle. In addition, dairymen should not apply chlorinated hydrocarbons in dairy buildings or barns or on cattle.

This step is not needed to protect public health nor to satisfy legal requirements, both of which are currently being met by Illinois dairymen. However, during the past two years occasional accidents, excessive drift, or misuse of these insecticides in other states has led to voluntary dumping of milk which was followed by unwarranted and unfavorable publicity for the entire dairy industry. These accidents and much of this unfavorable publicity can be avoided by adopting a policy that will

enable Illinois dairymen to continue to produce a wholesome, nutritious, and legal product.

Dairy farmers should realize the impact these recommendations will have on their insect control practices. The insecticides recommended to replace the chlorinated hydrocarbons often may be more expensive, more difficult to apply, and more dangerous to the applicator, and may provide less effective insect control. Even though these chlorinated hydrocarbons have label clearance for certain uses on dairy farms, we are currently recommending their discontinuance by dairy farmers to prevent any accidental contamination of milk.

*Resistant northern corn rootworms* have been present in Illinois for at least three years. However, we do not recommend that Illinois farmers change their soil insecticide practice because of them. If you have grown corn for 8 or 10 years in succession in a field, if you have used soil insecticides almost every year, if the corn lodged in August, and if there were lots of green beetles in the fresh silks, you may have resistant northern corn rootworm. In this case, plant some other crop in the field for two years. If this is not feasible and corn is to be planted, then use one of the recommended phosphates. For these fields we recommend that an application of 1½ pounds per acre of aldrin or heptachlor be broadcast and disked in before planting to control the entire complex of soil insects. However, only a very small percentage of Illinois farmers will find it necessary to make these two applications. Most will find that only aldrin or heptachlor is necessary to control soil insects. This statement does not apply to the dairyman, as indicated above.

### DOSAGE RATES FOR SOME COMMON INSECTICIDE FORMULATIONS

Use following fraction of gallon or lb. of granules or powder per acre to get indicated pounds of active ingredient:

Insecticide	Formulation	(pounds of active ingredient)							
		$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2
20% aldrin	granules	...	...	...	2.5 lb.	...	5 lb.	7.5 lb.	10 lb.
5% carbaryl	"	...	...	...	...	...	20	30	40
5% DDT	"	...	...	...	10	15 lb.	20	30	40
14% diazinon	"	...	...	...	...	...	7	10.5	14
10% dithiodemeton	"	...	...	...	5	...	10	...	...
20% heptachlor	"	...	...	...	2.5	...	5	7.5	10
10% parathion	"	...	...	...	5	...	10	...	...
10% phorate	"	...	...	...	5	...	10	...	...
80% carbaryl	powder	...	...	...	...	...	$1\frac{1}{4}$ lb.	$1\frac{7}{8}$ lb.	$2\frac{1}{2}$ lb.
50% diazinon	"	...	...	...	...	...	2	3	4
25% Guthion	"	...	...	...	2 lb.	...	4	...	...
25% aldrin	concentrate	...	...	...	$\frac{1}{4}$ gal.	...	$\frac{1}{2}$ gal.	$\frac{3}{4}$ gal.	1 gal.
46% carbophenothion	"	...	...	...	...	...	$\frac{3}{8}$	...	...
25% DDT	"	...	...	...	$\frac{1}{4}$	...	$\frac{1}{2}$	$\frac{3}{4}$	1
26% demeton	"	...	$\frac{1}{16}$ gal.	$\frac{1}{8}$ gal.	$\frac{1}{4}$	...	...	...	...
18.6% dieldrin	"	$\frac{1}{24}$ gal.	...	...	$\frac{3}{8}$	...	...	...	...
25% heptachlor	"	...	...	...	$\frac{1}{4}$	...	$\frac{1}{2}$	$\frac{3}{4}$	1
50-57% malathion	"	...	...	...	...	...	$\frac{1}{2}$	...	...
25% methoxychlor	"	...	...	...	$\frac{1}{4}$	...	$\frac{1}{2}$	$\frac{3}{4}$	1
25% naled	"	...	...	...	...	$\frac{3}{8}$	$\frac{1}{2}$	...	...
25% parathion	"	...	...	$\frac{1}{8}$	$\frac{1}{4}$	...	...	...	...
60% toxaphene	"	...	...	...	...	...	...	$\frac{1}{4}$	...

## KEEP A RECORD OF WHAT YOU DO

[illegible]

# **LIMITATIONS IN DAYS BETWEEN APPLICATION OF THE INSECTICIDE AND HARVEST OF THE CROP AND OTHER RESTRICTIONS ON THE USE OF INSECTICIDES FOR FIELD CROP INSECT CONTROL**

(Blanks in the table denote that the material is not recommended for that specific use in Illinois)

	Field corn				Forage crops			
	Seed and soil	Grain	Ensilage	Stover	Alfalfa	Clover	Pasture	Seed
aldrin	A	...	...	...	...	...	...	...
carbaryl (Sevin)	...	0	0	0	0	0	0	0
DDT	...	A	D	D	...	...	...	...
demeton (Systox) <sup>1</sup>	...	...	...	...	21,E	21,E	21,E	21,E
diazinon	A	0	10	10	10	10	2	10
dieldrin	A	60	D	D	...	...	...	...
dithiodemeton (Di-Syston) <sup>1</sup>	100	...	...	...	...	...	...	...
Guthion <sup>1</sup>	...	...	...	...	21,E	21,E	...	21,E
heptachlor	A	...	...	...	...	...	...	...
malathion	...	5	5	5	0	0	0	0
methoxychlor	...	...	...	...	7	7	7	7
naled (Dibrom)	...	...	...	...	4	4	4	4
parathion <sup>1</sup>	A	12	12	12	...	...	...	...
phorate (Thimet) <sup>1</sup>	A	B	B	B	...	...	...	...
toxaphene	...	A	C	C	...	...	...	D

	Barley		Oats		Rye		Wheat		Soybeans	
	Grain	Straw	Grain	Straw	Grain	Straw	Grain	Straw	Forage	Grain
carbaryl (Sevin)	F	F	F	F	F	F	F	F	0	0
carbophenothion (Trithion) <sup>1</sup>	...	...	...	...	...	...	...	...	D	7
demeton (Systox) <sup>1</sup>	45,G	21,G	45,G	21,G	...	...	45,G	21,G	...	...
dieldrin	7	D	7	D	7	D	7	D	D	35,E
dithiodemeton (Di-Syston) <sup>1</sup>	...	...	...	...	...	...	...	H	...	...
parathion <sup>1</sup>	15	15	15	15	...	...	15	15	...	...
phorate (Thimet) <sup>1</sup>	...	...	...	...	...	...	...	H	...	...
toxaphene	14,E	D	7,E	D	7,E	D	7,E	D	D	A

1. Except as granules, to be applied only by experienced operators wearing proper protective clothing.

A. No specific restriction when used as recommended.

B. Do not apply if soil application was used. Otherwise apply before tassel stage.

C. Do not feed treated forage to dairy animals. Do not feed sprayed forage or granular-treated corn silage to livestock fattening for slaughter nor granular-treated stover within 28 days of slaughter.

D. Do not feed treated forage to dairy animals or livestock fattening for slaughter.

E. Once per cutting.

F. Not after boot stage.

G. Apply no more than twice per season with at least 14 days between applications.

H. Do not graze treated wheat.



# FIELD CORN

Insects	Time of attack	Insecticide	Lb. active ingredient per acre	Placement	Timing of application
Seed corn maggot Seed corn beetle (NHE-27)	At germination	dieldrin heptachlor	Follow manufacturer's directions	On seed	Protects seed only. Use with resistant rootworm soil treatment.
Southern and northern corn rootworm (NHE-26)	June-August	aldrin <sup>1</sup> heptachlor <sup>1</sup>	1 in row 1½ broadcast same as aldrin	In soil In soil	To control soil insect complex. If broadcast, work into soil immediately.
Resistant corn rootworm <sup>2</sup>	June-August	diazinon granules dithiodemeton granules parathion granules phorate granules	1 1 1 1	Soil surface	Apply as 7-inch band on soil immediately ahead of press wheel.
Wireworm (NHE-43)	May-July	aldrin <sup>1</sup>	1 in row 1½ broadcast or 3 on peat soils or if many large worms are present	In soil	If broadcast, work into soil immediately. 1½ lb. kills only small ones.
White grub (NHE-23)	May-October	heptachlor <sup>1</sup>	Same as aldrin	In soil	
Grape colaspis (NHE-25)	May-July	As for rootworm; broadcast preferred.			
Sod webworm (NHE-42)	May-June	carbaryl DDT <sup>1</sup>	1 1½	At base of plant	At time of initial attack.
Cutworm (NHE-38)	May-June	Broadcast preplant soil treatment of aldrin <sup>1</sup> or heptachlor <sup>1</sup> preferred as preventive.			
		carbaryl dieldrin <sup>1</sup> toxaphene <sup>1</sup>	2 ½ 3	At base of plant	When damage is first seen; use 50-100 gal. of finished spray per acre.
Grasshopper (NHE-74)	June-September	carbaryl diazinon dieldrin <sup>1</sup> malathion toxaphene <sup>1</sup>	¾ ½ ¼ 1 1½	On entire plant	As needed. For ensilage corn use diazinon, malathion, or carbaryl.
Flea beetle (NHE-36)	May-June	carbaryl toxaphene <sup>1</sup>	¾ 1½	Over row	When damage becomes apparent on small corn.
Armyworm (NHE-21)	May-June	carbaryl toxaphene <sup>1</sup>	1½ 1½	Over row	At first migration or when damage first becomes apparent.
Fall armyworm (NHE-34)	June; August-September	carbaryl granules toxaphene <sup>1</sup> granules	1½ 1½	In whorls	Granules preferred for whorl. When silking (see earworm).
Chinch bug (NHE-35)	June-August	carbaryl dieldrin <sup>1</sup>	1 ½	At base of plant	At beginning of migration. Also apply strip in adjacent grain.
Thrips (NHE-39)	June	carbaryl	1	As foliage spray	When severe wilting and discoloration are noticed.
Corn leaf aphid (NHE-29)	July-September	malathion parathion <sup>3</sup> phorate granules	1 ¼ 1	As foliage spray In whorl	Pretassel when aphids are thick on occasional plants. Pretassel
Corn borer, first generation	June-July	carbaryl granules DDT granules <sup>1</sup> diazinon granules	1½ ¾ 1	On upper ⅓ of plant and into whorl	When tassel ratio is 30 to 50, and 75% or more plants show recent borer feeding in whorl.
Corn borer, second generation	Mid-August	carbaryl DDT <sup>1</sup> diazinon	As for first generation	From ear upward	At first hatch when there are 1 or more egg masses per plant.
Corn earworm (NHE-33)	July-August	carbaryl spray	1½	In ear zone, seed corn only	2 to 4 applications at 3- to 5-day intervals, starting at 10% silk. 25 gal. of finished spray per acre.

<sup>1</sup> Not for use on dairy farms. If for foliage application adjacent to dairy pasture or hay crop, avoid drift.

<sup>2</sup> Dairy farmers should use these materials in 1965 for soil insect control although they are not as effective as aldrin or heptachlor.

<sup>3</sup> To be applied only by experienced operators or those wearing protective clothing.

## SOYBEANS

Insect	Time of attack	Insecticide	Lb. active ingredient per acre	Placement	Timing of application
Bean leaf beetle (NHE-67)	May-June, August	carbaryl toxaphene <sup>1</sup>	1 1½	On foliage	When leaf feeding becomes severe, but before plants killed and pods eaten.
Clover root curculio adult (NHE-71)	May-June	carbaryl toxaphene <sup>1</sup>	1 1½	On marginal rows	When clover is plowed up, beetles migrate to adjacent beans.
Grasshopper (NHE-74)	June-September	carbaryl dieldrin <sup>1</sup> toxaphene <sup>1</sup>	¾ ¼ 1½	On foliage	When migration from adjacent crops begins.
Flea beetle	May-June	carbaryl toxaphene <sup>1</sup>	1 1½	On foliage	Seedlings usually attacked. Treat when needed.
Green clover worm (NHE-75)	August	carbaryl toxaphene <sup>1</sup>	1 1½	On foliage	When damage appears and small worms are numerous.
Webworm (NHE-42)	June-August	carbaryl toxaphene <sup>1</sup>	1 1½	On foliage	When damage appears and small worms are numerous.
Mites	June-August	carbophenothion <sup>2</sup>	¾	On foliage	As needed on field margins and entire field.

<sup>1</sup> Not for use on dairy farms. If for foliage application to fields adjacent to dairy pasture or hay crop, avoid drift.

<sup>2</sup> To be applied only by experienced operators or those wearing protective clothing.

## STORED GRAIN (Corn, Wheat, and Oats)

Insect	Time of attack	Insecticide <sup>1</sup> and dilution	Dosage	Placement	Suggestions
Angoumois grain moth (earcorn) (NHE-62)	April-October (Southern ⅓ of Illinois)	malathion 57% E.C., 3 oz. per gal. water	Apply to runoff	Spray surface and sides in April and August	Plant tight husk varieties. Shelled corn is not affected by Angoumois moth.
Meal moths and surface infestations only (NHE-63)	April-October	malathion 1.0% dust	30 lb. per 1000 sq. ft.	Spray or dust on surface	Clean and spray bin before storage. Do not harvest grain until moisture is safe for storage.
		malathion 57% E.C., 3 oz. per gal. water	2 gal. per 1000 sq. ft.		
<b>General</b>					
Internal and external feeders (NHE-64, 65)	April-October	malathion 1.0% dust	40-60 lb. per 1000 bu.	Spray or dust uniformly as grain is binned	Clean and spray bin before storage. Do not harvest grain until moisture is safe for storage.
Rice and granary weevils		malathion 57% E.C., 1 pt. per 3-5 gal. water	3-5 gal. per 1000 bu.		
Flat grain beetle		liquid fumigant	3-5 gal. per 1000 bu.	On surface; repeat if necessary	Clean and spray bin before storage. Do not harvest grain until moisture is safe for storage. Use surface treatment of malathion as recommended for meal moths.
Saw-toothed grain beetle					
Rusty grain beetle					
Foreign grain beetle					
Cadelle beetle					
Flour beetle					

<sup>1</sup> Use only "premium grade" malathion on grain. Malathion vaporizes and is lost rapidly when grain is heat-dried.

Note: E.C. = emulsion concentrate.

## SMALL GRAINS

Insect	Time of attack	Insecticide	Lb. active ingredient per acre	Placement	Timing of application
Grasshopper (NHE-74)	June-August	carbaryl dieldrin <sup>1</sup> toxaphene <sup>1</sup>	$\frac{3}{4}$ $\frac{1}{16}$ $1\frac{1}{2}$	On entire plant	Control early while grasshoppers are small and before they scatter over a wide area.
Chinch bug (NHE-35)	June-July	carbaryl dieldrin <sup>1</sup>	1 $\frac{1}{2}$	At ground and base of stalk	Treat strip in grain to protect corn from migrating bugs.
Armyworm (NHE-21)	May-June	carbaryl toxaphene <sup>1</sup>	1 $1\frac{1}{2}$	On foliage	When worms are still small and before damage is done.
Greenbug	May-June	demeton <sup>2</sup> parathion <sup>2</sup>	$\frac{1}{4}$ $\frac{1}{4}$	On foliage	When needed.
Hessian fly	Sept.-October; April-May	dithiodemeton phorate <sup>4</sup>	$\frac{1}{2}$ $\frac{1}{2}$	In drill row	5 lb. of 10% granules at seeding with a grass-seeder attachment. For susceptible varieties seeded early in fall.

<sup>1</sup> Not for use on dairy farms. If for foliage application to fields adjacent to dairy pasture or hay crop, avoid drift.

<sup>2</sup> To be applied only by experienced operators or those wearing protective clothing.

## CLOVER AND ALFALFA

Insect	Time of attack	Insecticide	Lb. active ingredient per acre	Placement	Timing of application
Alfalfa weevil	April-June	diazinon Guthion <sup>2</sup> malathion methoxychlor	1 $\frac{1}{2}$ 1 $1\frac{1}{2}$	On foliage	When 50% of tips are being skeletonized; second growth may need protection.
Clover leaf weevil (NHE-12)	March-April	malathion	1	On foliage	When larvae are numerous and damage is noticeable, usually early to mid-April.
Spittlebug (NHE-13)	Late April, early May	methoxychlor	1	On foliage	When bugs begin to hatch and tiny spit-tle masses are found in crowns of plants.
Aphid (NHE-14 and 19)	April-May	demeton <sup>2</sup> diazinon malathion	$\frac{1}{4}$ $\frac{1}{2}$ 1	On foliage	When aphids are becoming abundant.
Leafhopper (NHE-22)	Early July	carbaryl methoxychlor	1 1	On foliage	When second-growth alfalfa is 1 to 6 inches high, or as needed.
Garden webworm (NHE-42)	July-August	carbaryl toxaphene <sup>1</sup>	1 $1\frac{1}{2}$	On foliage	When first damage appears. Use toxaphene only on new fall seedlings, not for hay or grazing.
Cutworm (NHE-77)	April-June	carbaryl	$1\frac{1}{2}$	On foliage	Cut, remove hay, and spray immediately.
Armyworm (NHE-21)	May-June, September	carbaryl malathion	$1\frac{1}{2}$ 1	On foliage	Only when grasses are abundant.
Seed crop insects (NHE-68 and 73)	July-August	toxaphene <sup>1</sup>	$1\frac{1}{2}$	On foliage	No later than 10% bloom.
Grasshopper (NHE-74)	June-September	carbaryl diazinon malathion naled	$\frac{3}{4}$ $\frac{1}{2}$ 1 $\frac{3}{4}$	On foliage	When grasshoppers are small and before damage is severe.
Sweet clover weevil (NHE-15)	April-May	toxaphene <sup>1</sup>	$1\frac{1}{2}$	On foliage	When 50% of foliage has been eaten. New seedlings only. Observe small-grain restrictions.

<sup>1</sup> Not for use on dairy farms. If for foliage application to fields adjacent to dairy pasture or hay crop, avoid drift.

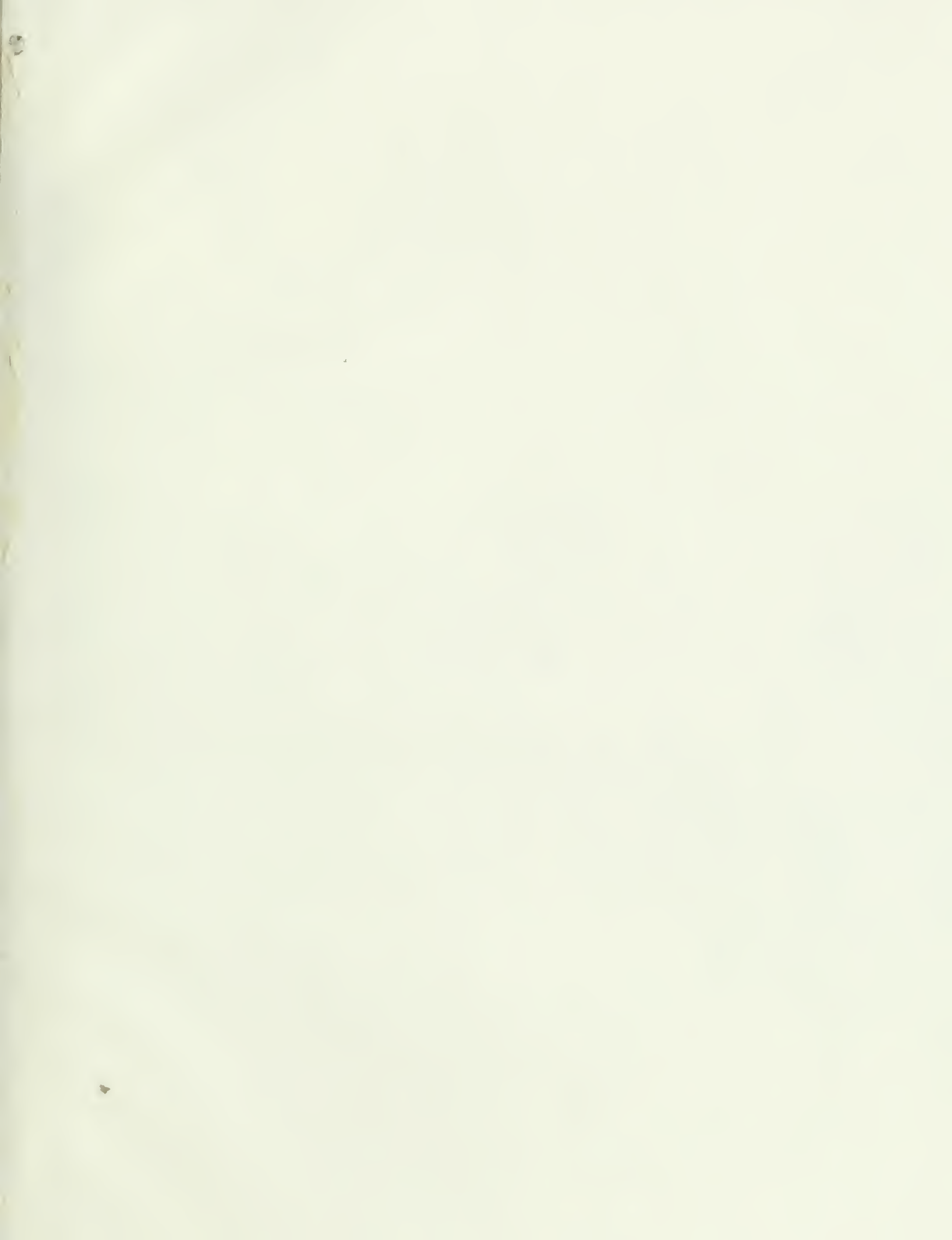
<sup>2</sup> To be applied only by experienced operators or those wearing protective clothing.



FOR YOUR PROTECTION: Always handle insecticides with respect. The persons most likely to suffer ill effects from insecticides are the applicator and his family. Accidents and careless, needless overexposure can be avoided. Here are a few rules that if followed will prevent most insecticide accidents:

1. Wear rubber gloves when handling insecticide concentrates.
2. Do not smoke while handling or using insecticides.
3. Keep your face turned to one side when opening insecticide containers.
4. Leave unused insecticides in their original containers with the labels on them.
5. Store insecticides out of reach of children, irresponsible persons, or animals; store preferably in a locked cabinet.
6. Wash out and bury or burn empty insecticide containers.
7. Do not put the water-supply hose directly into the spray tank.
8. Do not blow out clogged nozzles or spray lines with your mouth.
9. Wash with soap and water exposed parts of body and clothes contaminated with insecticide.
10. Do not leave puddles of spray on impervious surfaces.
11. Do not apply to fish-bearing or other water supplies.
12. Do not apply insecticides, except in an emergency, to areas with abundant wildlife.
13. Do not apply insecticides near dug wells or cisterns.
14. Do not spray when weather conditions favor drift.
15. Observe all precautions listed on the label.









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